

Hydraulically Actuated, Local Reset, Pressure Reducing Deluge Valve

FDV - PH0

The FDV is a fire protection control valve for deluge fire sprinkler systems, designed for installation in hazardous environments.

It is suitable for vertical or horizontal installation and features a globe-pattern, line-pressure-operated design with a direct elastomeric diaphragm seal. The valve contains no balancing spring or internal metallic components in the wetted space. Its hydrodynamic flow path ensures high flow rates with minimal head loss.

The FDV-PH0 is a pressure-control deluge system, hydraulically actuated and locally reset. When the hydraulic detection system (a wet pilot detection line) is exposed to a predetermined temperature, one or more automatic sprinklers shatter open, triggering the FDV-PH0 deluge valve to open. Once open, the valve reduces the high inlet pressure to a predetermined fixed outlet pressure. The system includes an emergency manual override valve, which bypasses the fire detection system and enables manual activation when needed.

This system reduces upstream pressure to a set downstream value and maintaining it at a steady level. It responds to downstream pressure fluctuations caused by changes in flow demand, ensuring stable output pressure.

The system is equipped with a PSA - a device that manually and locally pressurizes the wet pilot pipeline, automatically stops pressurization in a fire scenario, and compensates for minor leakage-related pressure losses. This system is suitable for open-nozzle water spray pipelines.



MARKETS



Commercial



Industry



Marine



Storage



Residential



Airport

TECHNICAL DATA

FLUID: Water, Brackish water, Sea water, Foam

SIZE RANGE:
40mm to 250mm (1½" to 10")

AVAILABLE CONNECTIONS ENDS:
Flange*Flange, Groove*Groove, Flange*Groove, Groove*Flange, Thread*Thread

PRESSURE NOMINAL:
250 psi (17.2 bar)

REGULATION RATIO: 5:1

SENSITIVITY:
1.45 psi (0.1 Bar)

ADVANTAGES

- Only three parts: body, diaphragm, and cover plate. No wet metal spring inside the control chamber.
- Full-bore, unobstructed design.
- Simple manual reset to the valve's standby position without draining or opening the valve itself, and without closing the OS &Y or other system valves.
- Maintained in a standby closed position.
- Low maintenance cost: the valve can be serviced in-line and includes only one replaceable part — a long-life elastomeric diaphragm.
- Complies with NFPA 25, the standard for the inspection, testing, and maintenance of water-based fire protection systems.

CHARACTERISTICS

- Hydrodynamic pattern design ensures high flow rates with minimal head loss.
- The valve trips open automatically upon gradual release of water pressure from its control chamber. The trip is actuated by the hydraulic pressure release of a Wet Pilot Line, triggered by exposure to flame heat.
- Soft closing occurs upon pressurization of the valve's control chamber — either by line pressure or an independent water source — to prevent surges.
- A pressure-reducing pilot enables full control over downstream pressure and ensures stable regulation across a wide pressure range.

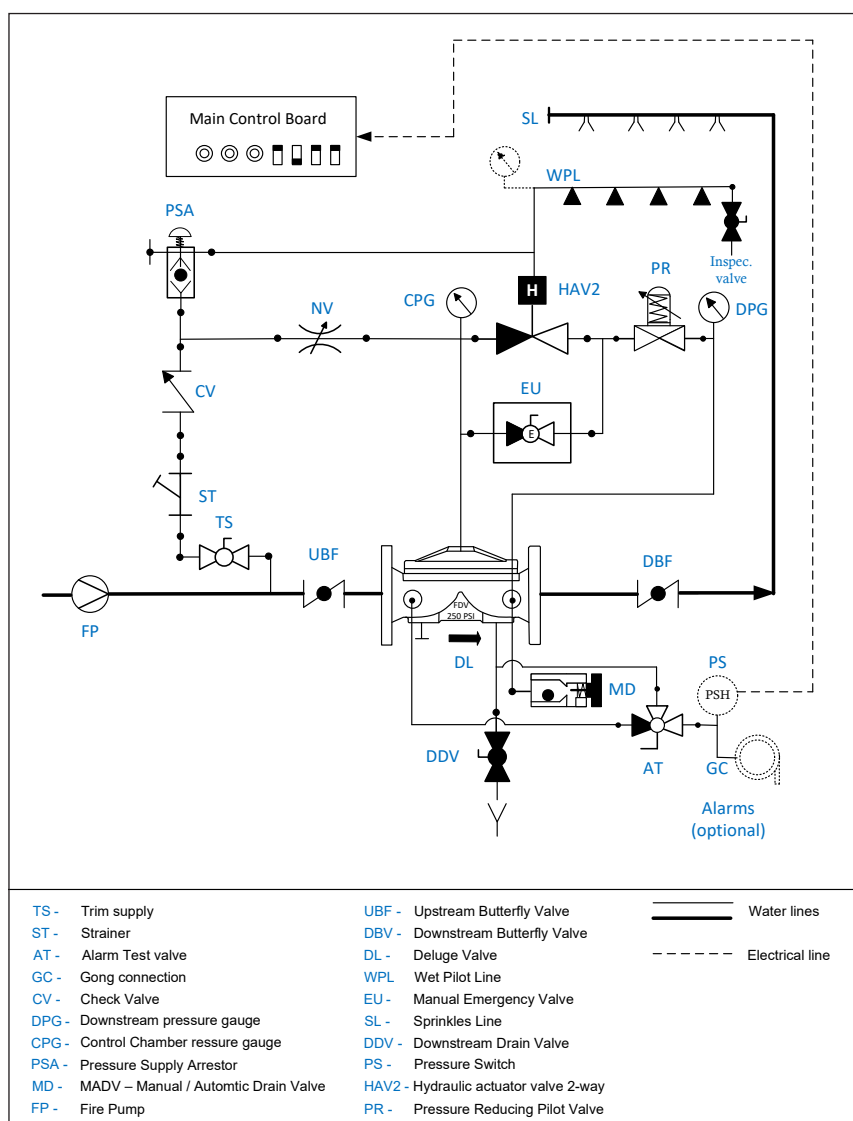
The FDV-PH0 resets to the stand-by closed position by pressurizing the Dry Pilot Line and manually operating the PSA device.

APPROVALS



Schematic drawing:

Set position



OPERATION

SET POSITION

Pressurized water in the valve's control chamber (DL) is trapped by the check valve (CV), the closed emergency valve (EU), the closed hydraulic drain actuator (HAV2), and the pressure release arrestor device (PSA).

The hydraulic pressure accumulated in the Wet Pilot detection line (WPL) keeps the hydraulic actuator in its closed position, thereby maintaining the FDV deluge valve closed.

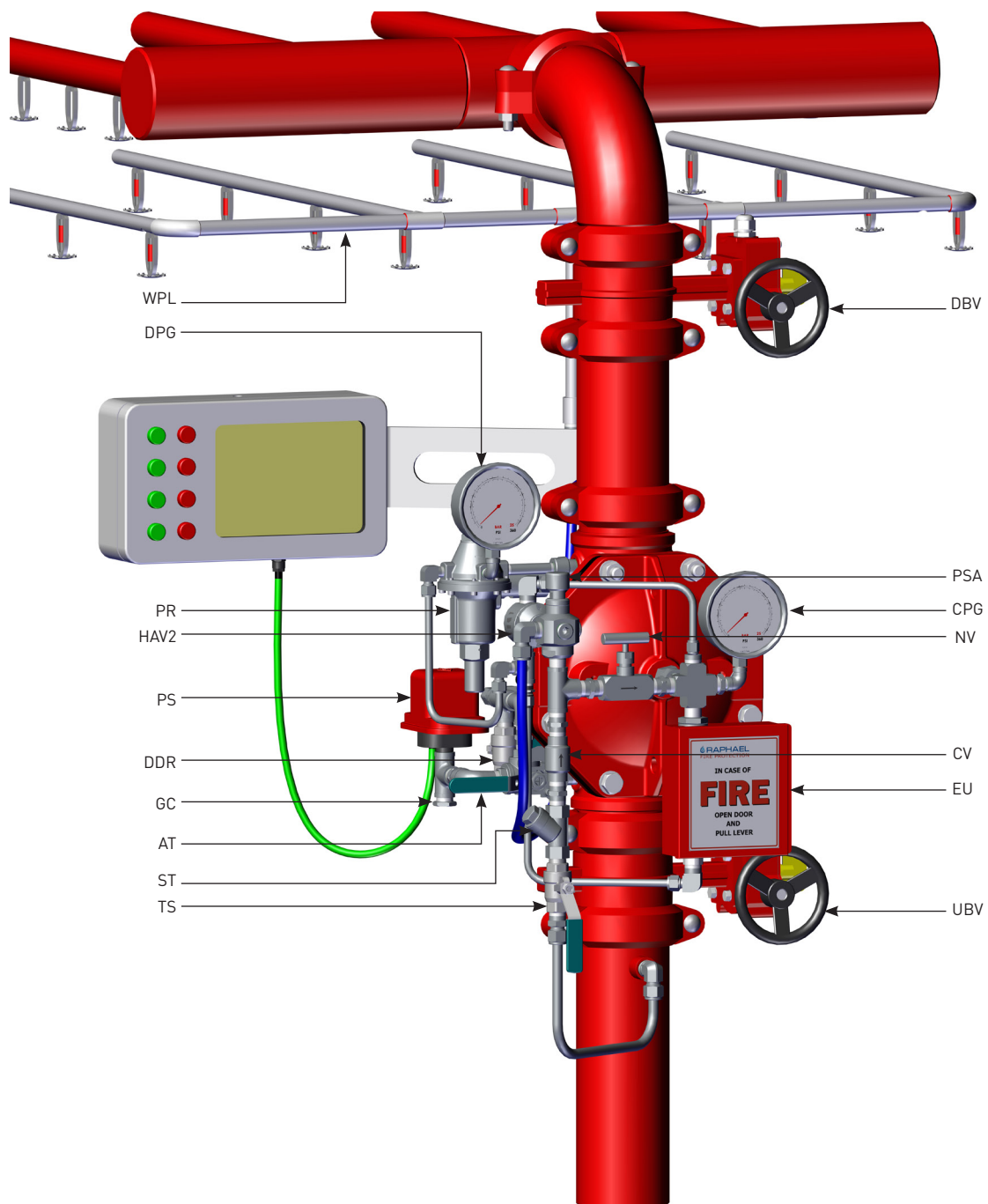
FIRE SITUATION

When the automatic fire sprinklers in the Wet Pilot detection line are exposed to flame heat and shatter open, the hydraulic actuator's control chamber depressurizes and drains the deluge valve's control chamber through the pressure-reducing pilot valve PRPV (PR).

The FDV deluge valve opens, admitting water into the spray sprinkler line (SL) at a reduced and steady preset pressure.

RESET POSITION

To reset the system, all shattered-open fire sprinklers in the Wet Pilot detection line must be replaced. Then, the Pressure Release Arrestor device (PSA) push button must be pressed to enable the re-pressurization of the Wet Pilot detection line. As a result, the hydraulic actuator closes, commanding the FDV deluge valve to close.



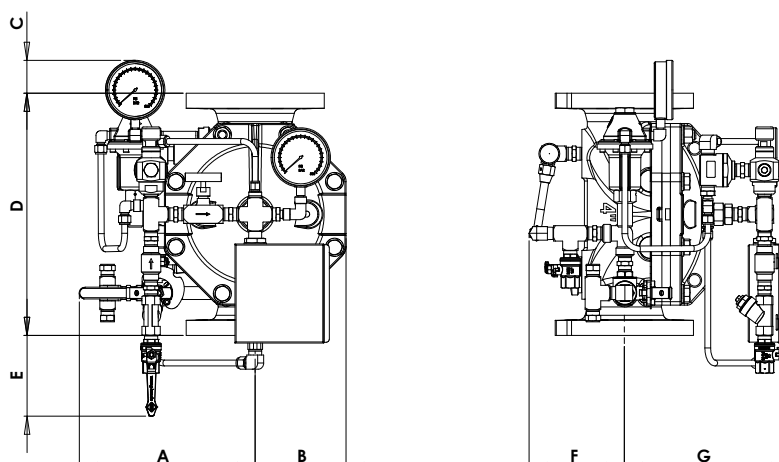
TS - Trim supply valve
ST - "Y" strainer
CV - Check valve
AT - Alarm test valve
GC - Gong Connection
DDR - Downstream drain valve

PS - Pressure Switch
HAV2 - Hydraulic Actuator Valve
PR - Pressure Reducing Pilot Valve
DPG - Downstream Pressure Gauge
WPL - Wet Pilot Line
DBV - Downstream Butterfly valve

PSA - Pressure Supply Arrestor
NV - Needle valve
CPG - Control chamber Pressure Gauge
EU - Emergency Manual Unit
UBV - Upstream Butterfly valve

Parametric drawing:

FDV-PH0



Dimensions Table

Size	1½"		2"		3"		4"		6"		8"		10"	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	260	10.2	267	10.5	297	11.7	290	11.4	315	12.4	340	13.4	395	15.5
B	122	4.8	121	4.7	135	5.3	150	5.9	178	7	232	9.1	305	12
C	101	3.9	103	4	93	3.6	54	2.1	45	1.77	47	1.8	44	1.7
D	204	8.0	220	8.6	324	12.7	400	15.7	464	18.2	570	22.4	766	30.1
E	232	9.1	222	8.7	170	6.7	133	5.3	100	3.9	47	1.8	N/A	N/A
F	151	5.9	151	5.9	137	5.4	158	6.2	167	6.6	191	7.5	221	8.7
G	260	10.2	208	8.1	230	9	272	10.7	340	13.3	374	14.7	490	19.3
Kg/lb	13	29	15.2	33.5	32.2	70.5	48	106	59	130	104	230	235	518

Factory Standard

MAIN VALVE

BODY & COVER

- Ductile iron
- Cast Steel WCB
- Stainless Steel CF8
- Stainless Steel CF8M
- Nickel Aluminum Bronze

ELASTOMERS:

- NR, fabric reinforced Natural Rubber
- EPDM, fabric reinforced
- NBR, fabric reinforced Nitrile Rubber

COATING:

- Base layer – high built Epoxy FBE
Top layer – electrostatic Polyester powder RAL 3000
- Rilsan Polyamide based (Nylon 11)
- Internal – vitreous Enamel
External – Epoxy/Polyester powder RAL 3000

TRIM

PIPING & TUBING:

- Stainless Steel 316
- Copper/Brass
- Cupro-Nickel
- Monel®

FITTINGS:

- Stainless Steel 316
- Brass
- Super Duplex
- Cupro-Nickel
- Monel®

ACCESSORIES:

- Stainless steel CF8M / 316
- Brass
- Nickel Aluminum Bronze
- SMO-245
- Monel®

PLEASE SPECIFY

- Working Media
- Ambiental conditions
- Min/Max operating flow
- Min/Max operating pressure
- Downstream set pressure
- Wet Pilot's installation height.
- Deluge valve material and coating
- Deluge valve ends and standard
- Trim materials
- System installation orientation
- Additional accessories needed:
Alarm Pressure switch
Alarm Gong